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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/766,557	01/27/2004	Glenn Joseph Leedy	ELM-1 Cont. 14	3092

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EXAMINER	
PERKINS, PAMELA E	

ART UNIT	PAPER NUMBER
2822	

DATE MAILED: 12/07/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/766,557	LEEDY, GLENN JOSEPH	
	Examiner	Art Unit	
	Pamela E. Perkins	2822	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *27 January 2004*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *77-118* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *77-118* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *7/21/04, 9/10/04, 9/27/04, 2/1/05, 4/11/05, 7/5/05, 8/15/05, 10/28/05*
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

This office action is in response to the filing of the application paper on 27 January 2004. Claims 77-118 are pending; claims 1-76 have been cancelled.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 77-79 and 92 are rejected under 35 U.S.C. 102(b) as being anticipated by Chu (4,934,799).

Chu discloses a method of maskless lithographic pattern generation using an array of exposure cells wherein the exposure cells expose separate areas of a surface to be exposed (col. 1, lines 25-38), wherein a substantial portion of the separate areas are exposed simultaneously (col. 2, lines 49-68). Chu further discloses moving through a sequence of horizontal and vertical motions at least one of the array of exposure cells and the surface to be exposed (col. 3, lines 1-8).

Referring to claim 92, although Chu does not specifically state the array of exposure cells includes at least one million cells, it is intent that the array of exposure cells includes at least one million cells because Chu uses a laser beam to generated the lithographic pattern. It is commonly known in the art that a laser comprises millions of cells.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 80 and 83 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chu in view of Eisenberger (4,028,547).

Chu discloses the subject matter claimed above except aligning by electro-magnetic coupling the array of exposure cells and the surface to be exposed.

Eisenberger discloses a method of lithographic pattern generation using an array of exposure cells wherein the exposure cells expose separate areas of a surface to be exposed (col. 2, lines 12-21). Eisenberger further discloses aligning by electro-magnetic coupling the array of exposure cells and the surface to be exposed (col. 2, lines 60-64 & col. 3, lines 64-66).

Referring to claim 83, Eisenberger discloses radiation from a radiation source cell is X-ray (abstract; col. 2, lines 23-27).

Since Chu and Eisenberger are both from the same field of endeavor, a method of lithographic pattern generation, the purpose disclosed by Eisenberger would have been recognized in the pertinent art of Chu. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Chu by aligning by electro-magnetic coupling the array of exposure cells and the surface to be

exposed as taught by Eisenberger to reduce device size without loss of bean intensity (col. 2, lines 12-21 & 60-64).

Claims 81 and 82 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chu in view of Yokomatsu et al. (4,810,889).

Chu discloses the subject matter claimed above except each exposure cell is selected from the group consisting of a radiation source cell or a shuttered cell, wherein the shutter of a shuttered cell is used to vary operation of the exposure cell.

Yokomatsu et al. disclose a method of maskless lithographic pattern generation using an array of exposure cells wherein the exposure cells expose separate areas of a surface to be exposed (col. 1, lines 8-14). Yokomatsu et al. further disclose selecting each exposure cell from the group consisting of a radiation source cell or a shuttered cell, wherein the shutter of a shuttered cell is used to vary operation of the exposure cell (col. 2, lines 20-46).

Since Chu and Yokomatsu et al. are both from the same field of endeavor, a method of maskless lithographic pattern generation, the purpose disclosed by Yokomatsu et al. would have been recognized in the pertinent art of Chu. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Chu by selecting each exposure cell from the group consisting of a radiation source cell or a shuttered cell, wherein the shutter of a shuttered cell is used to vary operation of the exposure cell as taught by Yokomatsu et al. to reduce device size and exposure time (col. 1, lines 31-34).

Claims 84-86, 90, 93, 98, 104, 106, 107, 111 and 117 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chu in view of Greschner et al. (4,393,127).

Chu discloses the subject matter claimed above except providing a stress-controlled dielectric layer on the substrate.

Referring to claims 84, 93 and 107, Greschner et al. disclose a method of lithographic pattern generation where an array of exposure cells is provided on a substrate, wherein the exposure cells expose separate areas of a surface to be exposed; and providing at least one stress-controlled dielectric layer on the substrate (col. 5, lines 28-50).

Since Chu and Greschner et al. are both from the same field of endeavor, a method of lithographic pattern generation, the purpose disclosed by Greschner et al. would have been recognized in the pertinent art of Chu. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Chu by providing a stress-controlled dielectric layer on the substrate as taught by Greschner et al. to increase device stability (col. 5, lines 45-50).

Referring to claim 85, Chu discloses exposing a substantial portion of the separate areas simultaneously (col. 2, lines 49-68).

Referring to claim 86, Chu discloses moving through a sequence of horizontal and vertical motions at least one of the array of exposure cells and the surface to be exposed (col. 3, lines 1-8).

Referring to claim 90, Greschner et al. disclose radiation from a radiation source cell is X-ray (abstract).

Referring to claims 98 and 111, Greschner et al. disclose the at least one stress-controlled dielectric layer is selected from the group consisting of silicon dioxide and silicon nitride (col. 5, lines 28-45).

Referring to claim 106, although Chu does not specifically state the array of exposure cells includes at least one million cells, it is intent that the array of exposure cells includes at least one million cells because Chu uses a laser beam to generated the lithographic pattern. It is commonly known in the art that a laser comprises millions of cells.

Referring to claims 104 and 117, Greschner et al. discloses the claimed invention except for forming the at least one stress-controlled layer at a temperature of about 400 ^{O}C. It would have been obvious to one having ordinary skill in the art at the time invention was made to form the at least one stress-controlled layer at a temperature of about 400 ^{O}C, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. *In re Aller*, 105 USPQ 233 (CCPA 1955).

Claim 87 is rejected under 35 U.S.C. 103(a) as being unpatentable over Chu in view of Greschner et al. as applied to claim 84 above, and further in view of Eisenberger.

Chu in view of Greschner et al. disclose the subject matter claimed above except aligning by electro-magnetic coupling the array of exposure cells and the surface to be exposed.

Eisenberger discloses a method of lithographic pattern generation using an array of exposure cells wherein the exposure cells expose separate areas of a surface to be exposed (col. 2, lines 12-21). Eisenberger further discloses aligning by electro-magnetic coupling the array of exposure cells and the surface to be exposed (col. 2, lines 60-64 & col. 3, lines 64-66).

Since Chu and Eisenberger are both from the same field of endeavor, a method of lithographic pattern generation, the purpose disclosed by Eisenberger would have been recognized in the pertinent art of Chu. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Chu by aligning by electro-magnetic coupling the array of exposure cells and the surface to be exposed as taught by Eisenberger to reduce device size without loss of bean intensity (col. 2, lines 12-21 & 60-64).

Claims 88 and 89 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chu in view of Greschner et al. as applied to claim 84 above, and further in view of Yokomatsu et al.

Chu in view of Greschner et al. disclose the subject matter claimed above except each exposure cell is selected from the group consisting of a radiation source cell or a shuttered cell, wherein the shutter of a shuttered cell is used to vary operation of the exposure cell.

Yokomatsu et al. disclose a method of maskless lithographic pattern generation using an array of exposure cells wherein the exposure cells expose separate areas of a

surface to be exposed (col. 1, lines 8-14). Yokomatsu et al. further disclose selecting each exposure cell from the group consisting of a radiation source cell or a shuttered cell, wherein the shutter of a shuttered cell is used to vary operation of the exposure cell (col. 2, lines 20-46).

Since Chu and Yokomatsu et al. are both from the same field of endeavor, a method of maskless lithographic pattern generation, the purpose disclosed by Yokomatsu et al. would have been recognized in the pertinent art of Chu. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Chu by selecting each exposure cell from the group consisting of a radiation source cell or a shuttered cell, wherein the shutter of a shuttered cell is used to vary operation of the exposure cell as taught by Yokomatsu et al. to reduce device size and exposure time (col. 1, lines 31-34).

Claims 91, 94, 95 and 108 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chu in view of Greschner et al. as applied to claims 77 and 84 above, and further in view of Hori et al. (5,188,706).

Chu in view of Greschner et al. disclose the subject matter claimed above except the stress of the stress-controlled dielectric layer is less than about 8 x 108 dynes/cm^2.

Hori et al. disclose a method of lithographic pattern generation where an array of exposure cells is provided on a substrate, wherein the exposure cells expose separate areas of a surface to be exposed; and providing at least one stress-controlled dielectric layer on the substrate (col. 1, lines 9-13; col. 4, lines 5-59).

Referring to claims 91 and 94, Hori et al. disclose the stress of the stress-controlled dielectric layer is less than about 8 x 108 dynes/cm^2.

Since Chu and Hori et al. are both from the same field of endeavor, a method of lithographic pattern generation, the purpose disclosed by Hori et al. would have been recognized in the pertinent art of Chu. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Chu by the stress of the stress-controlled dielectric layer is less than about 8 x 108 dynes/cm^2 as taught by Hori et al. to increase density and stress stability (col. 4, lines 5-8).

Referring to claims 95 and 108, Greschner et al. disclose the stress as tensile (col. 5, lines 39-50).

Claims 96, 97, 109 and 110 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chu in view of Greschner et al. as applied to claim 77 above, and further in view of Celler et al. (5,051,326).

Chu in view of Greschner et al. disclose the subject matter claimed above except the stress of the at least one stress-controlled dielectric layer is 2 to 100 times less than the fracture strength of the at least one stress-controlled dielectric layer.

Celler et al. disclose a method of lithographic pattern generation where an array of exposure cells is provided on a substrate, wherein the exposure cells expose separate areas of a surface to be exposed (col. 1, lines 10-18); and providing at least one stress-controlled dielectric layer on the substrate (col. 2, lines 7-31).

Referring to claims 96 and 109, Celler et al. disclose the stress of the at least one stress-controlled dielectric layer is 2 less than the fracture strength of the at least one stress-controlled dielectric layer (col. 3, lines 48-54; col. 4, lines 60-66).

Since Chu and Celler et al. are both from the same field of endeavor, a method of lithographic pattern generation, the purpose disclosed by Celler et al. would have been recognized in the pertinent art of Chu. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Chu by the stress of the at least one stress-controlled dielectric layer is 2 less than the fracture strength of the at least one stress-controlled dielectric layer as taught by Celler to prevent deformation (col. 2, lines 7-10).

Referring to claims 97 and 110, Greschner et al. disclose the stress as tensile (col. 5, lines 39-50).

Claims 99-101, 103, 105, 112-114, 116 and 118 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chu in view of Greschner et al. as applied to claim 77 above, and further in view of Murooka et al. (5,166,962).

Chu in view of Greschner et al. disclose the subject matter claimed above except the at least one stress-controlled dielectric layer is elastic and the at least one stress-controlled dielectric layer is formed by multiple RF energy sources.

Murooka et al. disclose a method of lithographic pattern generation where an array of exposure cells is provided on a substrate, wherein the exposure cells expose

separate areas of a surface to be exposed (col. 2, lines 25-39); and providing at least one stress-controlled dielectric layer on the substrate (col. 1, lines 27-46).

Referring to claims 99 and 112, Murooka et al. disclose the at least one stress-controlled dielectric layer as elastic (col. 7, line 64 thru col. 8, line 15).

Referring to claims 100 and 113, although Murooka et al. does not specifically state the at least one stress-controlled dielectric layer is substantially flexible, by definition elastic means flexible.

Referring to claims 101 and 114, Murooka et al. disclose the at least one stress-controlled dielectric layer is capable of forming at least one of a flexible membrane and a free standing membrane (co. 3, line 64 thru col. 4, line 6).

Referring to claims 103 and 116, Murooka et al. disclose the at least one stress-controlled dielectric layer is formed by multiple RF energy sources (col. 4, lines 29-40).

Referring to claims 105 and 118, Murooka et al. disclose providing at least one thinned flexible substrate that has integrated circuits formed thereon (col. 1, lines 13-26).

Since Chu and Murooka et al. are both from the same field of endeavor, a method of lithographic pattern generation, the purpose disclosed by Murooka et al. would have been recognized in the pertinent art of Chu. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Chu by the at least one stress-controlled dielectric layer is elastic and the at least one stress-controlled dielectric layer is formed by multiple RF energy sources as taught by Murooka et al. to improve transmittance (col. 2, lines 22-29).

Allowable Subject Matter

Claims 102 and 115 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter: prior art does not disclose, teach or suggest providing a plurality of interconnect conductors formed within the at least one stress-controlled dielectric layer.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Pamela E. Perkins whose telephone number is (571) 272-1840. The examiner can normally be reached on Monday thru Friday, 8:30am to 5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Zandra Smith can be reached on (571) 272-2429. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

PEP

Supervisory

ZANDRA V. SMITH
PRIMARY EXAMINER
12/5/05